Designing Consumer Health IT:
A Guide for Developers and Systems Designers

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Overview

The Agency for Healthcare Research and Quality (AHRQ) is working to speed the development of effective consumer health information technology (IT) applications so people can better use their personal health information to manage their health. AHRQ sought to learn about methods and strategies that have been used to design and develop successful consumer IT products in industries other than health care. The research first identified successful products based on market penetration, sales, and customer adoption and enjoyment. Next, the research examined the design methods that were used to develop these successful products through: 1) an environmental scan and grey literature review, 2) in-depth interviews with expert developers, and 3) guidance from a technical expert panel (TEP).

What is the Purpose of this Guide?

This document is designed to highlight key strategies that have been used to produce outstanding consumer IT products. This guide presents 10 recommendations as a way to introduce new approaches to consumer health IT developers and companies that want to increase sales and better satisfy customers. The recommendations focus on the design methods and issues to consider throughout the development process and into commercialization. Where possible, advice is provided about how to apply these recommendations for consumer health, especially considerations about interoperability, privacy, and product safety.

Who Should Use this Guide?

These recommendations are intended for anyone who is involved in building and marketing consumer health IT products, including the following audiences:

• Designers of consumer health IT applications

• Developers and vendors of consumer health IT applications

• Companies seeking to improve their position in the consumer health IT market

Why Will This Guide be Valuable?

• The guide is constructed to show how attention to customer needs and expectations throughout the design and development process will result in products that are accepted, useful, and used.

• This information is meant to assist companies that are starting a consumer health IT enterprise, seeking to improve their presence in the market, or expanding their customer base to new segments of health care consumers.
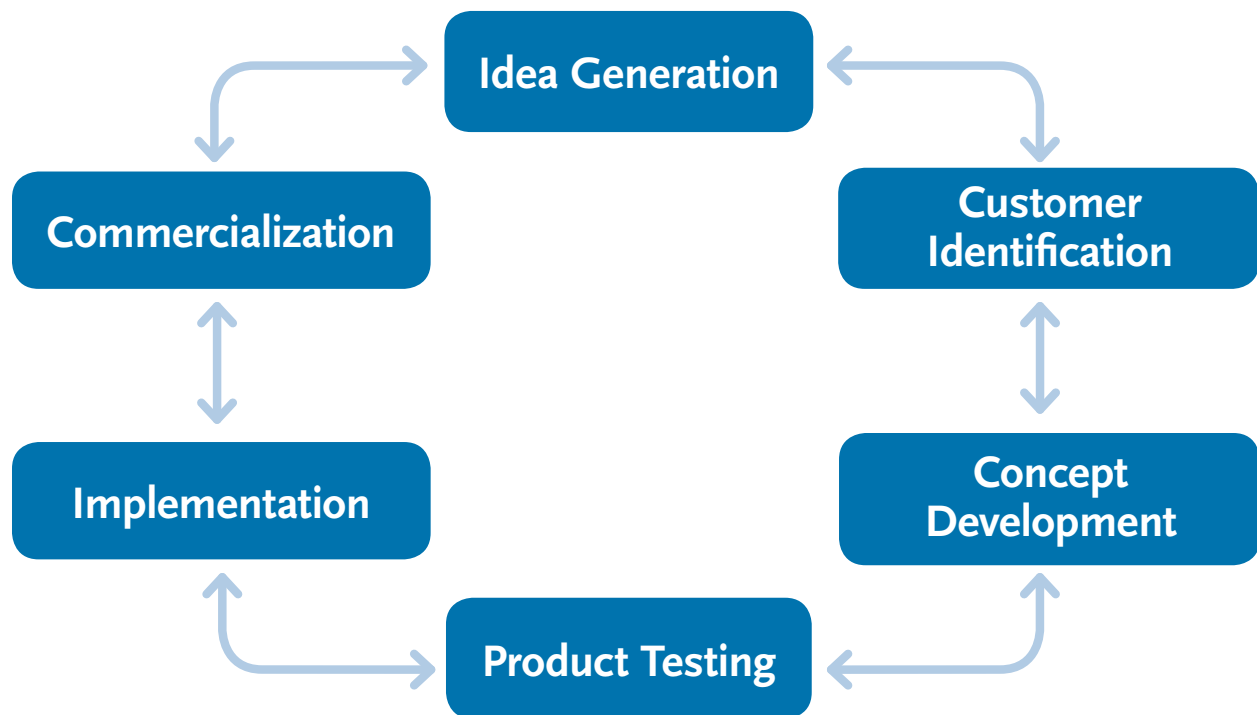
How to Use This Guide

The recommendations in this guide can be used to support designers and developers as they progress through the consumer product development process. Commonly accepted product development phases include the six areas in Figure 1, starting with idea generation and ending with commercialization. Some recommendations will apply to most or all phases, while others will be more directed to the beginning, middle, or end of the cycle. A critical point is that the process itself should be fluid and include feedback loops throughout so customers and the environments in which they operate are always in mind. This guide can help you to:

• Prepare for a new consumer health IT development effort. Before getting started, design teams can first review all 10 recommendations, integrating them into the planning process. A table shows which recommendations apply to each of 6 design phases in the product design process (See Table 1).

• Prepare for a specific design phase. Before beginning each design phase, design teams can also review the specific issues and considerations that apply and get oriented to proven and emerging design methods and strategies.

The guide also includes a list of relevant resources. In this section, you can find links to the background reports. This list also includes links to other useful Federal reports and information about data and interoperability standards used in health IT applications.

Figure 1:

Consumer Product Design Process

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                    Idea Generation
        
   Commercialization              Customer
                                  Identification

   Implementation                 Concept
                                  Development

                    Product Testing
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Idea Generation: Start by developing ideas for a new product, using research methods to identify market needs or trends, and analyzing findings. The focus may be the product infrastructure as well as the user interface.

Identification of Customers: Identify the anticipated and existing customers (e.g., patients, their health care providers, their caregivers) of a product and assess their needs. Use cases and use contexts may be defined at this phase.

Concept Development: Develop and refine the ideas and plans for the features or characteristics of a product.

Product Testing: Incorporate testing and evaluation methods in an iterative process to move from a prototype to a more finished product. Tailor testing to anticipated customers when developing a new product and to existing customers when redesigning an existing product.

Implementation: Fully develop a product (based on the tested design) and get ready to release it to the market.

Commercialization: Introduce a product to the public, based on decisions about when and where to launch and approaches for pricing and marketing. Employ strategies to influence product success before and after launch, and metrics to monitor success.

Table 1:

Recommendations Mapped by Development Phases

#	Recommendations	IDEA GENERATION	CUSTOMER IDENTIFICATION	CONCEPT DEVELOPMENT	PRODUCT TESTING	IMPLEMENTATION	COMMERCIALIZATION
1	Assemble and prepare a design team consisting of members with appropriate knowledge and skills for all product development phases.	✓	✓	✓	✓	✓	✓
2	Strive to understand customer needs within the environments that the product will be used throughout all product development phases.	✓	✓	✓	✓	✓	✓
3	Include a diverse set of customers when generating ideas for new products and when evaluating early product iterations.	✓	✓	✓	✓	✓	
4	Select and apply well-developed and established design methods in combination with intuition- or innovation-driven design approaches.	✓	✓	✓	✓	✓	✓
5	Use multiple approaches early to learn about customers and the market to inform the product's design.	✓	✓	✓			
6	Drive design decisions and modifications based on learning from prototyping and pilot testing activities.		✓	✓	✓		
7	Define and tailor success metrics based on the needs and contexts of unique customer segments.		✓	✓	✓	✓	✓
8	Balance customer needs with product safety and privacy concerns specific to health IT products.		✓	✓	✓	✓	✓
9	Build products based on established health data and transmission standards.			✓	✓	✓	
10	Incorporate successful marketing strategies to promote the product and be responsive to customers once the product is promoted and adopted.					✓	✓

Recommendation 1

Assemble a design team consisting of members with appropriate knowledge and skills for all product development phases.

Your design team should include members that have all the skill sets needed to design and develop the product. The specific areas of expertise needed will vary based on the anticipated product and the projected characteristics of the consumer audience.

Prepare team members for each specific design task by having them explore and learn about the domain of the planned product. Ideally they will have direct exposure to the potential consumers in the environment(s) where the product will be used.

Processes

Aim for a medium size team, about five to nine people for efficient project management and communications.

Include members with relevant skill sets, such as:

- Designers with a track record of successful consumer product development
- Expert in human factors or usability
- Health care domain experts such as physicians and others who would interact with consumers using health IT applications
- Safety and privacy experts if the product needs to meet related standards, regulations, and customer expectations
- Those with expertise in understanding diverse cultures or specific groups who make up the intended customer base

At each product development phase, re-evaluate the makeup of the team and make adjustments if other expertise is needed to accomplish the design activities in that phase.

Special Considerations for Health Products

Participatory design techniques include consumers (e.g., patients, providers) in the design team, which ensures that their point of view is considered during the design process.

To understand health environments and patient or health consumer experiences, use "just-in-time" education tools, such as videos of patients and caregivers, patient online communities, and virtual environments.

Value

- The design team will have a greater breadth of knowledge and expertise to apply to the design and development activities.
- The team members will have a greater understanding of the product domain and intended customers.

Recommendation 2

Strive to understand customer needs within the environments that the product will be used throughout all product development phases.

In all phases of development, your team should continue to learn about customers and the environments in which they will use the products being designed. Team members should learn about interpersonal relationships, physical surroundings, and social and environmental (home and work) factors that might affect how customers will use a product.

Customer needs include the overarching need, or the problem that customers intend to solve with the purchase of a product as well as the functional needs such as:

- User preferences for user interface design (such as look and feel of the interface)
- Adaptability of the interface (which may be especially important for customers with visual, auditory, cognitive or other disabilities)
- Fit with workflow or other daily activities.

Processes

- Ensure that all team members, including marketers and managers, dedicate time and effort to observing consumers and their use of products.
- Observe real customers in realistic settings rather than laboratory settings to better reveal and understand behaviours, barriers, and preferences.
- Observe customers completing realistic tasks to provide a better opportunity to assess how useful a product will ultimately be.
- Collect data on how customers accomplish tasks with a product (not just their "opinions") to get a more objective view about their actual capabilities and limitations when using it.

Special Considerations for Health Products

Health-related activities can occur in a wide variety of environments, including medical offices, hospitals, the home, work environments, and the local community.

Virtual environments, like online patient communities, health-related blogs, and other types of social media may also be monitored to see how health issues are discussed.

Value

- The design team will be able to understand the usefulness of the product across multiple customer segments and environments.
- When upgrading products, the design team will be able to identify priorities for redesign.

Recommendation 3

Include a diverse set of customers when generating ideas for new products and when evaluating early iterations of products.

You will want to identify all the segments of customers that may use your product early in the design process. Only by understanding the various subgroups can you make sure they are represented in needs assessment and design tasks.

You should examine the customer subgroups separately so you can identify similarities and differences across groups. Differences across customer segments may be addressed in the product design or in the marketing strategy.

Processes

- Examine customer characteristics that may influence interest in and use of the product, including:

  - Age

  - Gender

  - Literacy

  - Type of health condition or wellness practice

  - Health risk factors

- Identify extremes in various groups of people to consider the needs of diverse customers (e.g., young adult versus elderly users).

- Create personas (profiles of specific persons in customer segments) to develop an understanding of the overall segments.

- Test early iterations of products by customer segment to compare reactions across groups and assess potential usefulness of the product for those segments.

Special Considerations for Health Products

Diversity in customers can span not only culture (i.e., gender, ethnicity, socioeconomic status, and sexual orientation), but also health-related needs (i.e., health and disease status, health disparities, and health literacy).

When health products are designed for patients, make sure to consider any physical, environmental and cognitive limitations that may affect their use of the product. In some cases, caregivers may be a key audience segment because they may use the product in their role of helping the patient.

Value

- The design team will be able to develop technologies that are both useful to and usable by customers who have varying needs, capabilities, and limitations.

- Attending to diverse customer needs will improve use and adoption of the product.

Recommendation 4

Select and apply well-developed and established design methods in combination with intuition-based design approaches.

You can select from several design methods that have already proven to be useful for general IT applications, such as market-based and user-centered approaches:

- **Market-based:** methods to understand the current needs of consumers and what products are available to them.
- **User-centered:** methods to get customer input, either by talking to them directly or observing them using products.

You may also think about using new intuition or intuition-driven approaches to design:

- **Intuition-based:** methods to generate ideas among the design team based on brainstorming or applying knowledge gained from past experience about what product is needed.

Processes

- Select from established design methods that have been used to develop successful products. To find the best fit for designing your product, you can review several industry-tested strategies.
- Choose design methods that incorporate principles of user-centered design and a usability approach in the development of consumer health IT applications.
- Choose methods that support testing early and often during the development process.
- Test products with anticipated and existing customers of the product in the environments where they will be used.
- If basing product ideas on intuition, make sure to confirm their value with experts and consumers during testing and marketing.

Special Considerations for Health Products

With health products, you will want to use methods that help you understand the specific health conditions, the health behaviors desired, and the needs of customers and their providers.

Use this information to help you identify and evaluate other similar products that may be currently available. Competing products may come from health associations, public health organizations, and private sector companies.

Value

- Translating user needs into design is more likely to result in a product with desired features and features that competitors have not yet incorporated into their products.
- Designers may save time and money by using established methods.
- As a company builds experience with design methods, it will become better at applying them when developing future products.

Recommendation 5

Use multiple approaches early to learn about customers and the market to inform the product's design.

You should validate whether there is a real need for a product early in the design and development process. You can use a variety of approaches to assess the potential of your ideas in the market through research, gap analysis, and product benchmarking. Other ideas include informal and formal discussions with existing or potential customers including those on the design team. Brainstorming sessions with the design team or reflecting on past product development experiences are other alternatives to be utilized.

Processes

- Market-based approaches
  - Use information already available in public databases or published studies of care experience.
  - Identify gaps in the market by reviewing existing and related products for advantages and disadvantages.
- User-centered approaches
  - Interview potential customers or follow their opinions online to find out what they want and need.
  - Develop low fidelity prototypes and get feedback from potential customers.
- Intuition-based approaches
  - As design team members' expertise grows, they will also have the experience needed to better anticipate promising directions for new products.

Special Considerations for Health Products

If you are interested in people with specific health conditions, you can review blogs that some patients keep. Several well-known blogs on health conditions exist. You can also search for condition-specific blogs with directories such as Technorati.

Depending upon type of health condition, you will want to balance the perspectives of clinicians with those of patients.

Value

- Designers will be able to determine early in the design and development process whether a product will fill a market need.
- Designers will be able to validate customer needs and avoid wasting money on designing a product that will not be successful.

Recommendation 6

Drive design decisions and modifications based on learning from prototyping and pilot testing activities.

You should test the product design continuously throughout development. Use the results to revise the product so your design is consistent with consumer needs and expectations and goals for how it will be used.

You can use many different prototyping techniques:

- Low fidelity prototypes are low cost, simple illustrations of designs or concepts, usually on paper or digital documents.

- Medium fidelity prototypes more closely resemble the actual product but use inexpensive resources, such as HTML, PowerPoint, or Flash.

- High fidelity prototypes are more expensive and closer to the look and functionality of the actual product.

Before large-scale development, you will want to pilot test an early working version of the product to find and correct problems.

Processes

- Use heuristic reviews by external usability experts as well as customer reviews to test prototypes.

- Use lower fidelity prototyping in early phases until the product design is ready for more advanced stages of development.

- Incorporate several rounds of prototype testing at each stage as needed to confirm the acceptability of the design across consumer segments and intended uses.

- Rapid prototyping and testing can also help you respond to changes as they emerge in the market.

- Use internal testing to identify "bugs" and design flaws and usability tests with consumers to assess functionality and task completion.

- Conduct pilot tests in realistic conditions and environments to better understand whether they work as intended.

Special Considerations for Health Products

Finding and engaging some consumer health populations can be challenging because they are sick, do not consider themselves to have a health problem, or are stigmatized by the condition. Consumer health advocacy organizations and online patient communities may help you access consumers with specific health conditions for testing activities.

Value

- Companies will be able to reduce the need for making changes later in the development process and control development costs.

- Designers will be able to continually assess usefulness and usability of the product as they work toward a final prototype for pilot testing.

- Designers who pilot test can identify serious issues before large scale development of expensive applications.

Recommendation 7

Define and tailor success metrics based on the needs and contexts of unique customer segments.

You should think about what a successful adoption would look like so you can use relevant measures to evaluate your product. Many factors influence product success, ranging from the product's design, to marketing strategies, to customer support services.

You will want to understand what will motivate a customer to use the product. Use includes the initial use at adoption and continuous use for some products. Usability attributes that may be important include learnability, efficiency, memorability, and user satisfaction.

You should understand what will make your product appeal to your customer segments. Depending upon needs and expectations, you may need metrics looking at whether the product is culturally appropriate, fun, motivating, and persuasive.

Processes

- Have a clear understanding of the use goal of your product.

- Identify existing metrics, and determine if they are appropriate for the use goal and customer segments for your product.

- Consider different usability metrics and how they apply to your product.

- As needed, define new metrics of success tailored to your product and unique needs of your customers. Test new metrics with customers to see how well they map to product use and adoption.

- Define success metrics early so they can be used to assess competing products and develop benchmarks for the new product.

- Obtain help from experts who understand metrics for measuring customer reactions related to fun, motivation and persuasion.

Special Considerations for Health Products

For consumer health IT products, metrics are often in the context of the health or wellness concern. For chronic conditions, measuring motivations to use a product over time may be important. For a product that is promoting health behavior change, such as smoking cessation, the focus may be on persuasive communication.

Value

- Designers will be able to better understand the metrics that are needed to contribute to successful adoption.

- Companies will be able to emphasize certain product attributes to appeal to customers when marketing the product.

Recommendation 8

Balance customer needs with product safety and privacy concerns specific to health IT products.

Health IT products that do not conform to rigorous standards for product safety, privacy, and data security could pose a risk not only to your company but to your consumer. When customers are not protected, they are likely to have negative attitudes and reject products.

More so than other products, consumer health IT products must clearly address privacy and safety adequately, for both customers and regulatory agencies. You will want to understand the potential for harm and benefit, as well as customer perceptions of the harms and benefits, when designing and developing such products.

Processes

- Engage customers to learn about their attitudes toward privacy and safety in the context of the specific health IT application.

- Consult Federal guidelines and regulations on privacy and data security issues in the design of the product.

- Follow safety standards and guidelines when designing consumer health IT products.

- Evaluate the effects that customer limitations (such as physical, cognitive, and sensory limitations) have on safe conditions for use. Consider these effects during all design phases.

- Design systems to elicit informed consent for providing personal information.

- Make it easy for customers to understand how a product addresses privacy concerns.

Special Considerations for Health Products

Consumer health IT products must take into account customer perceptions and concerns about safety and privacy. Personal health information is extremely sensitive for customers who are concerned about the negative outcomes of privacy violations.

Early product releases is a strategy used in the customer product industry for getting quick consumer feedback in other industries. This strategy, however, may not be possible with consumer health IT products because these products must adequately address product safety concerns before being made available to customers.

Value

- Designers will be able to ensure to safer consumer products that protect customer data when they are launched.

- Companies will be able to maximize the product's use and impact.

Recommendation 9

Build products based on established health data and transmission standards.

You should strive to use commonly accepted industry standards so that communication and interoperability are supported across health IT applications and systems. These standards are meant to promote health information liquidity, coordination, and overall usefulness.

One way to extend the reach of your products is to design them so they can be used across operating environments without need for significant re-coding or additional coding. This may save costs and enable more efficient product diffusion.

Processes

- Review existing data and transmission standards, such as:
    - United States Health Information Knowledgebase (USHIK), a metadata registry of healthcare-related data standards
    - The Direct Project which establishes standards and documentation for pushing data to where it's needed
- Monitor emerging standards being widely adopted such as the Direct Project-established standards, Continuity of Care Documentation (CCD), and those promoted via the Standards and Interoperability (S & I) Framework community.
- Use common terminologies and specifications such as SNOMED, ICD (International Classification of Diseases) coding, RxNorm.

Special Considerations for Health Products

Consumer health IT products can be designed to operate independently from other products, but they may become obsolete more quickly. At the national level, for example, greater emphasis is being placed on enabling electronic health records (EHRs) to integrate patient-generated data. Emerging products need to be designed with this reality in mind.

To be ready to apply current standards, you can learn about common standards being used by other health care device manufacturers. For example, you can identify interfacing standards for devices using WiFi, Bluetooth, and Ant.

Value

- Designers will be able to ensure that their product is interoperable with other information technology used in the health care system.
- Companies will be able to position a product to integrate with business partners such as health information exchanges and electronic health record vendors.
- Companies can maximize the product's adoption by consumers and health care professionals seeking to use a multi-pronged approach for health information management.

Recommendation 10

Incorporate successful marketing strategies to promote the product and be responsive to customers once the product is promoted and adopted.

You can use several different marketing strategies to encourage purchase and continued use of your product. Before launch, you will want to make sure the product is ready and performs well against competing products. You will also want to prepare your sales force and partners to be able to describe the product, how it works, and its benefits.

After launch, you can use marketing strategies to keep abreast of customer reactions. If customers are satisfied, their reviews can be used to further publicize the product. If they are dissatisfied, the information can be used to guide product redesign.

Processes

Before launching a product:

- Test it with customers to be sure that it works as expected, is useful, and is usable.

- Test it against competitor's products to see whether it is better or equivalent in quality.

Spread information about the product to the public:

- Fully train retailers, distributors, partners in the use of the product so that they are prepared to sell it.

- Provide representatives with marketing materials.

- Use social media to generate interest in the product.

After launching a product, respond to customers:

- Provide incentives, such as coupons, to purchase it.

- Provide easy access to a customer support channel and invite customers to provide feedback.

- Establish a process or mechanism for responding to customer requests and feedback.

Special Considerations for Health Products

Some consumer health IT products are well-suited for revisions after launch, such as Internet-based products. However, customers may not respond as positively to changes in health IT devices because they may no longer trust the quality or reliability of the product.

You can use some of the same social media outlets that you used to learn about customer needs to promote the product, such as online patient communities and blogs.

Value

- Designers will be able to ensure to safer consumer products that protect customer data when they are launched.

- Companies will be able to maximize the product's use and impact.

Relevant Resources and Links to Resources Available Online

Background Reports for This Guide

Agarwal R, Anderson C, Crowley K, & Kannan PK. Improving Consumer Health IT Application Development: Lessons From Other Industries, Understanding Development Methods From Other Industries to Improve the Design of Consumer Health IT: Background Report; 2011. (Prepared by Westat, under Contract No. HHSA290200900023I.) AHRQ Publication No. 11-0065-EF. Rockville, MD: Agency for Healthcare Research and Quality. Available at:

http://www.healthit.ahrq.gov/ developmentmethodsbackgroundreport

Applying Lessons Learned From Successful Consumer Products to Consumer Health IT Design: Findings from Key Informant Interviews. (Prepared by Westat under Contract No. HHSA290200900023I.) AHRQ Publication No. 12-0079-EF. Available at:

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Other Relevant Federal Reports

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http://www.healthit.ahrq.gov/Consumer_Health_IT_Human_ Factors_Design_Guide

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Science Panel on Interactive Communication and Health. Wired for Health and Well-Being: the Emergence of Interactive Health Communication. Washington, DC: US Department of Health and Human Services, US Government Printing Office, April 1999. Available at:

http://www.health.gov/scipich/pubs/finalreport.htm

Usability Basics. Web Communications and New Media Division, U.S. Department of Health and Human Services, Washington, DC. Available at:

http://www.usability.gov/basics/index.html

Other Resources

The Direct Project http://www.directproject.org	Establishes standards and documentation to support simple scenarios for pushing data from place to place, in a way that will support more sophisticated interoperability in the future.
Health IT Standards Committee http://www.healthit.hhs.gov/standardscommittee	Committee charged with making recommendations to the National Coordinator for Health IT on standards, implementation specifications, and certification criteria for the electronic exchange and use of health information.
Integrating the Healthcare Enterprise® (IHE) http://www.wiki.ihe.net	Initiative by health care professionals and industry to improve the way computer systems in healthcare share information.
International Classification of Diseases (ICD) http://www.who.int/classifications/icd	The standard diagnostic tool for epidemiology, health management and clinical purposes. It is used to classify diseases and other health problems recorded on many types of health and vital records including death certificates and health records. These records enable the compilation of national morbidity and mortality statists and are used for reimbursement and resource allocation decision-making by countries.
Rx Norm https://www.nlm.nih.gov/research/umls/rxnorm	A normalized naming system for generic and branded drugs; and a tool for supporting semantic interoperation between drug terminologies and pharmacy knowledge base systems. The National Library of Medicine (NLM) produces RxNorm.
SNOMED CT http://www.ihtsdo.org/snomed-ct	An extensive clinical terminology that is concept-oriented and has an advanced structure that meets most accepted criteria for a well-formed, machine-readable terminology. It is produced by the Healthcare Information Technology Standards Panel and has also been adopted for use by the US Federal Government, through the Consolidated Health Informatics (CHI) Initiative, for several clinical domains.
USHIK: United States Health Information Knowledgebase http://www.ushik.org	Metadata registry of healthcare-related data standards funded and directed by the Agency for Healthcare Research and Quality (AHRQ) with management support in partnership with the Centers for Medicare & Medicaid Services
CarePages http://www.carepages.com	Online community where users create personalized web sites to share their stories and issues with friends and family members and receive messages of love and encouragement. CarePages.com also offers a resources and support tools.

Other Resources

Blog for a Cure http://www.blogforacure.com	Online community for cancer survivors to post questions, share stories and personal advice, and seek information about treatment.
e-Patient Dave http://www.epatientdave.com	Blog of cancer survivor Dave deBronkart who was diagnosed with Stage IV renal (kidney) cancer in 2007. Standard topics covered include meaningful use, patient engagement and empowerment, and healthcare transformation.
Inspire http://www.inspire.com	Online community for patients and caregivers to connect and support each other. Offers consumer health research services to companies so they can learn about patients and their experiences.
CureTogether http://www.curetogether.com	Online community for visitors to share quantitative information on over 500 medical conditions, share information about sensitive symptoms, compare effectiveness of treatments, and track personal health data.
Webincina http://www.webicina.com	A free online service that provides curated medical social media resources in over 80 medical topics in over 17 languages to patients and medical professionals.
RareShare http://www.rareshare.org	Online community for patients with rare disorders and their families to communicate with others affected by the same disorder, contribute new information and personal experiences, and find additional disorder-specific resources.
CancerConnect http://www.cancerconnect.com	An online resource and community for cancer patients to seek information and post tips and inspirational messages.
Keep 'Em Cookin' http://www.keepemcookin.com	Online educational organization that aims to prevent preterm birth by providing pregnant women with current information on high-risk pregnancy and offering an online bed rest support group.
dLife: Your Diabetes Life http://www.dlife.com	Online resource and community for individuals with diabetes.
Jacob Nielsen's Useit.com Alertbox (general resource) http://www.useit.com/alertbox	Archive of bimonthly alert columns covering wide range of usability-related topics.

Other Resources

Jacob Nielsen's Useit.com Alertbox Usability 101 http://www.useit.com/alertbox/20030825.html	Alertbox column that presents basic information about usability.
Technorati http://www.technorati.com/blogs/directory	Searchable online directory of over one million blogs.
Google Blog Search http://www.google.com/blogsearch	Searchable online directory of blogs.
Manifesto for Agile Software Development http://www.agilemanifesto.org	Information about the agile development design method.
Yannig Roth Blog http://www.yannigroth.wordpress.com	Whitepaper about the Crowdsourcing design method posted on personal blog of Yannig Roth.
Contextual Design http://www.interaction-design.org/encyclopedia/contextual_design.html	Online encyclopedia that explains methods to collect data about users in the field, interpret and consolidate data, use that data to create and prototype product and service concepts, and iteratively test and refine those concepts with users.
Heuristic Evaluation http://www.useit.com/papers/heuristic/heuristic_evaluation.html	A how-to guide for conducting a heuristic evaluation.